Claims

1. A plasma sterilization apparatus, comprising a sterilization chamber for receiving therein a sterilization object, a high frequency power source, connected to a cathode, for generating optimal plasma under control of both an impedance matching controller and an impedance matching circuit, the cathode being installed, along with an anode at a predetermined distance, in the sterilization chamber, and a vacuum pump, connected through an exhaust pipe to the sterilization chamber, for extracting air from the sterilization chamber to form a vacuum state in the sterilization chamber, wherein the exhaust pipe is equipped with a dehumidifier for freeze-condensing the water vapor in the gas flowing through the exhaust pipe to prevent the entry of the water vapor into the vacuum pump.

2. The plasma sterilization apparatus as set forth in claim 1, wherein said dehumidifier forms a freezing cycle which comprises a compressor, a condenser, an expansion valve and a freezer, the freezer being housed in a housing connected to the exhaust pipe.